

Orthopaedic Footwear Design



About 10 million pairs of orthopaedic shoes are manufactured annually in the U.S. But they can cost as much as \$800 and delivery may take several months. The reason: the number of skilled custom shoemakers is declining rapidly while the need for orthopaedic shoes is increasing.

To alleviate the manpower shortage and technical problems associated with manual design and fabrication of orthopaedic/

custom footwear, researchers at North Carolina State University (NCSU) have developed a Computer-Aided Design/ Computer-Aided Manufacture (CAD/CAM) system called CUSTOM-LAST™. The system employs several task-specific computer programs,

among them the NASA-developed RIM database management system, which is used as a central repository for system-wide information storage. RIM is supplied by NASA's Computer Software Management and Information Center.

The CUSTOMLAST system is comprised of several modules. LASTMOD™ is a CAD package to allow a custom footwear specialist to modify a digitized three-dimensional image of a foot or commercial shoe last to

produce a last that can be cut on a milling machine. TORIM™ permits transfer of data from a geometric module to the centralized relational database management system. LASTCUT™ generates the tool path information to machine the shoe. LASTCHEQ™ checks the last against the digitized image generated by LASTMOD. In-addition, the University of Missouri-Columbia has developed three associated modules. Both universities offer licenses for the software at a fee.

The software development is part of a NASA technology utilization project initiated by Langley Research Center in 1986, in cooperation with Research Triangle Institute, Research Triangle Park, North Carolina, the Veterans Administration and the National Institute for Disability and Rehabilitation Research. ●

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